UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,155	01/03/2007	Takaji Wakita	1254-0299PUS1	6809

2292 7590 12/08/2008

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
SAJJADI, FEREYDOUN GHOTB	
ART UNIT	PAPER NUMBER
1633	

NOTIFICATION DATE	DELIVERY MODE
12/08/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/558,155	WAKITA ET AL.	
	Examiner	Art Unit	
	FEREYDOUN G. SAJJADI	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) *4 and 14-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-13 and 21* is/are rejected.

7)☒ Claim(s) *5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/23/05;12/23/05;1/3/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to papers filed August 11, 2008. Applicant's response to the restriction requirement of July 10, 2008, has been entered. No claims were amended, cancelled or newly added.

Currently, claims 1-21 are pending in the application.

Election/Restrictions

Applicants' election of Group I (claims 1-13 and 21), drawn to a replicon RNA, comprising a nucleotide sequence containing at least the 5' untranslated region, the nucleotide sequence encoding NS3 protein, NS4A protein, NS4B protein, NS5A protein and NS5B protein and the 3' untranslated region on the genomic RNA of hepatitis C virus (HCV) of genotype 2a, and a replicon-replicating cell comprising said replicon RNA, together with SEQ ID NO: 1 as the replicon RNA, SEQ ID NO:9 as the 5' untranslated region, and SEQ ID NO: 11, as the 3' untranslated region, is acknowledged. The election was made with traverse. Applicants' species election of neomycin resistance gene, human liver derived cell, Huh7 cell and replicon RNA mutation (b), also with traverse is further acknowledged.

Applicants' traversal is on the grounds that MPEP § 1850 indicates that unity of invention has to be considered only in relation to the independent claims and it is improper to require restriction to particular sequences.

Applicants' arguments have been fully considered, but are not found persuasive, because the determination of Unity of Invention is not affected by manner of claiming, and as stated in PCT rule 13.3, The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim. Moreover, the restriction requirement noted the pre-OG notice of 2007 limiting the search of independent biological sequences. In the instant case, Applicants have been provided with the search and examination of three separate SEQ ID NOS.

Applicants' traversal of the species requirement is predicated upon the same reasoning. Such is not found persuasive, because PCT rules do not preclude restriction of species presented

in dependent claims. Further, Applicants' arguments regarding burden are not pertinent to restriction under PCT rules, and moreover, the restriction requirement indicated that the distinct species do not share a substantially common structural feature to fulfill the requirements for unity of invention.

The election requirement is deemed proper and is therefore made **FINAL**. Claims 4 and 14-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Elected claims have been examined commensurate in scope with the elected invention, and the elected species of the invention. Please note that after a final requirement for restriction, the Applicants, in addition to making any response due on the remainder of the action, may petition the Commissioner to review the requirement. Petition may be deferred until after final action on or allowance of claims to the invention elected, but must be filed not later than appeal. A petition will not be considered if reconsideration of the requirement was not requested. (See § 1.181.).

Elected claims 1-3, 5-13 and 21 are under current examination.

Information Disclosure Statement

The information disclosure statement filed November 23, 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been fully considered, as foreign patent document EP 1043399 is in the German language.

Claim Objection

Claim 5 is objected to because of the following informalities: In line 1, the claim recites (a) or (b); however lines 2 and 3 direct the claim to (a) and (b). Deletion of the word "and" in line 2 would be remedial.

Claim 5 would be allowable if rewritten or amended to be directed only to the elected invention, i.e. SEQ ID NO: 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (J. Med. Virol. 64:334-339; 2001).

The claims embrace a replicon RNA of hepatitis C virus of genotype 2a, comprising a nucleotide sequence containing at least the 5' untranslated region, the nucleotide sequence encoding NS3 protein, NS4A protein, NS4B protein, NS5A protein and NS5B protein and the 3' untranslated region of the genomic RNA.

Kato et al. teach the recovery, cloning and sequence analysis of hepatitis C virus (HCV) genome from a hepatitis patient, having a sequence clustering around genotype 2a (Abstract). The HCV isolate contained the 5'UTR, NS3, NS4A, NS4B, NS5A, NS5B and 3'UTR regions (Table 1, p. 337).

Therefore by teaching all the limitations of the claim, Kato et al. anticipate the instant invention as claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (J. Virol. 76:2997-3006; 2002), in view of Kato et al. (J. Med. Virol. 64:334-339; 2001).

The claims embrace a replicon RNA, comprising a nucleotide sequence containing at least the 5' untranslated region, the nucleotide sequence encoding NS3 protein, NS4A protein, NS4B protein, NS5A protein and NS5B protein and the 3' untranslated region of the genomic RNA of hepatitis C virus of genotype 2a, further containing a neo selection marker and at least one IRES sequence.

Claims 10-13 are directed to the replicon RNA of claim 1 and a replicon-replicating Huh7 cell comprising said replicon, and various intended uses for the replicon and cell. As stated in MPEP 2106, II, language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. Examples of language that may raise a question as to the limiting effect of the language in a claim include statements of intended use or field of use. Accordingly, the intended used are not accorded any patentable weight.

Ikeda et al. describe selectable subgenomic RNAs derived from an infectious molecular clone of the HCV-N strain of HCV that are capable of efficient self-replication in cultured human hepatocyte cell line Huh7, with selection for G418 resistance following transfection (Title and Abstract). The authors depict clones containing a 5'UTR, Neo gene, EMCV IRES, NS3, NS4A, NS4B, NS5A, NS5B and 3'UTR regions (Fig. 1, p. 2998).

While the HCV-N strain described by Ikeda et al. is a genotype 1b virus, HCV genotype 2a virus was characterized in the prior art, as evidenced by Kato et al., who describe the recovery, cloning and sequence analysis of HCV type 2a genome from a hepatitis patient (Abstract).

The teachings of Ikeda et al. and Kato et al. are both directed to the characterization of HCV replicon RNA sequences. Thus a person of ordinary skill in the art would have been motivated to combine their respective teachings and construct subgenomic clones of the HCV 2a genotype, in the manner prescribed by Ikeda et al..

Therefore, it would have been *prima facie* obvious to someone of ordinary skill in the art at the time of the instant invention, to produce subgenomic clones of HCV genotype 2a as applied to the genotype 1b of Ikeda et al., resulting in the method of the instantly claimed invention. A person of ordinary skill in the art would have been motivated to combine the respective teachings of Ikeda et al. and Kato et al. to produce subgenomic RNA of genotype 2a, because such would allow the production of HCV 2a clones, for analysis and characterization of replication competence, with a reasonable expectation of success.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (J. Virol. 76:2997-3006; 2002), in view of Kato et al. (J. Med. Virol. 64:334-339; 2001), as applied to claims 1, 2 and 6-13 above, and further in view of JP 2002-171978 (Published June 18, 2002).

The claims embrace a replicon RNA, comprising a nucleotide sequence containing the 5' untranslated region (SEQ ID NO: 9), the nucleotide sequence encoding NS3 protein, NS4A protein, NS4B protein, NS5A protein and NS5B protein and the 3' untranslated region of the genomic RNA (SEQ ID NO: 11) of hepatitis C virus of genotype 2a, further containing a neo selection marker and an IRES sequence.

Ikeda et al. describe selectable subgenomic RNAs derived from an infectious molecular clone of the HCV-N strain of HCV that are capable of efficient self-replication in cultured human hepatocyte cell line Huh7, with selection for G418 resistance following transfection (Title and Abstract). The authors depict clones containing a 5'UTR, Neo gene, EMCV IRES, NS3, NS4A, NS4B, NS5A, NS5B and 3'UTR regions (Fig. 1, p. 2998).

Kato et al. describe the recovery, cloning and sequence analysis of HCV type 2a genome from a hepatitis patient (Abstract).

The HCV 5' and 3' UTR sequences as represented by SEQ ID NOS: 9 and 11, respectively, were disclosed in Sequence 1 of JP 2002-171978 corresponding to HCV type 2a (JFH-1).

The teachings of Ikeda et al., Kato et al. and JP 2002-171978 are all directed to the characterization of HCV replicon RNA sequences. Thus a person of ordinary skill in the art

would have been motivated to combine their respective teachings and construct subgenomic clones of the HCV 2a genotype comprising SEQ ID NOS: 9 and 11.

Therefore, it would have been *prima facie* obvious to someone of ordinary skill in the art at the time of the instant invention, to produce subgenomic clones of HCV genotype 2a comprising the sequences disclosed in JP 2002-171978, resulting in the method of the instantly claimed invention. A person of ordinary skill in the art would have been motivated to combine the respective teachings of Ikeda et al. Kato et al. and JP 2002-171978 to produce subgenomic RNA of genotype 2a, because such would allow the production of HCV 2a clones, for analysis and characterization of replication competence, with a reasonable expectation of success.

Examiner's Note

The prior art of record does not appear to teach or suggest an HCV genotype 2a RNA replicon comprising the nucleotide sequence represented by SEQ ID NO: 1.

Conclusion

Claims 1-3 and 5-13 are not allowed.

Claim 21 is considered allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FEREYDOUN G. SAJJADI whose telephone number is (571)272-3311. The examiner can normally be reached on 6:30 AM-3:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached on (571) 272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fereydoun G Sajjadi/
Examiner, Art Unit 1633